LA-UR-18-31301
Approved for public release; distribution is unlimited.

Title:	Being Responsive: Leonard Manzanares
Author(s):	Del Mauro, Diana
Intended for:	LANLtoday Web
Issued:	2018-12-04

- Phone

LANL inside
LANLINSIDE

Being Responsive: Leonard Manzanares

Lab Character: Who We Are

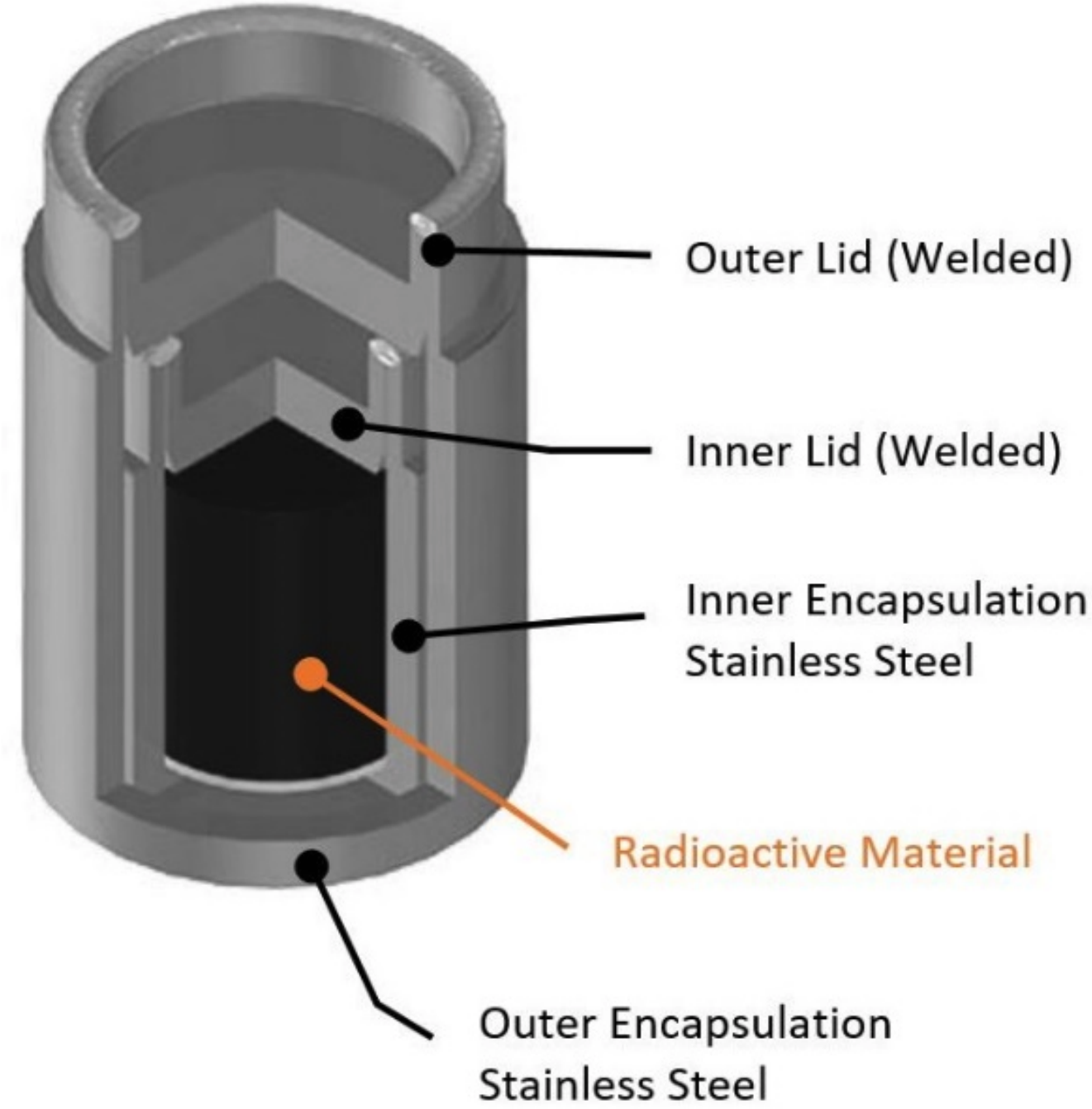
Leonard Manzanares

Hundreds of requests pour in annually — this 'trash collector' for cast off radioactive materials responds with specialized expertise

Albania, Armenia, Australia, Belize, Brazil, Chile, China, Dominican Republic, Ecuador, El Salvador, Georgia, Indonesia, Israel, Italy, Jamaica, Jordan, Latvia, Malaysia, Mexico, Morocco, Nepal, Nicaragua, Panama, Senegal, Singapore, Slovakia, Sweden, Tasmania and Turkey.

The inked stamps in his passport are testament to the globe-sweeping impact of this source recovery specialist from Los Alamos National Laboratory. His name is Leonard Manzanares, and nuclear and radiological material security is the mission that motivates him wherever he goes, domestically or internationally.

"I'm passionate about what I do because I'm making the world a safer place every day," he says. "That's my goal. Either to educate people or to get these sources out of the public sector. If they have no need to be there, let's get them out."



Since 2001, Manzanares has been with the Off-Site Source Recovery Program (OSRP), a federally funded effort managed by Los Alamos that provides a range of mostly free services to the private and public sector.

Manzanares has seen outlandish and even heartbreaking things as he deals with excess, unwanted, abandoned or orphaned radioactive devices that pose a potential risk to security, health and safety. In some locations these sealed radioactive sources are well protected, but in other cases they are abandoned in parking lots and scrapyards or other easily accessible places.

"You hear about dirty bombs so much that people with bad intent already have this thought in their head," Manzanares says.

Manzanares (Actinide Analytical Chemistry, C-AAC) has a degree in health physics and is a registered radiation protection technologist.

The toughest part of his job is having to leave his family so often. Because he must be responsive to a steady stream of source recovery and training requests, he travels up to three times a month. He can be gone for several weeks at a time.

His biggest frustration is what to do with foreign-origin sources, such as americium devices with source material that originates from reactors in Russia. "There is no disposition pathway for it once its service life has ended," Manzanares says. U.S. law forbids foreign-origin sources from being buried in the nation's underground repository for nuclear waste.

Two weeks in Brazil — and other adventures

Through OSRP, national initiatives and the International Atomic Energy Agency (IAEA), Manzanares visits regions of the world where nuclear and radiological material is not well managed. He works with international regulatory bodies on methods to search for and secure abandoned radioactive sources. Only encapsulated sources that were made in the United States can be eventually repatriated; the other sources are securely managed within their respective countries until long-term disposal facilities are constructed.

The biggest recovery to date was in Brazil, where Manzanares and OSRP team members spent two

weeks working with a wide variety of U.S. origin sources. Due to the large volume, OSRP had to hire a source manufacturer to disassemble the devices that the radioactive sources were in. The OSRP team packaged the sources, which were eventually repatriated (i.e., shipped back to the United States for secure and compliant disposal).

You never know what to expect on these trips, Manzanares says. On a mission in Nicaragua, he and crew wore bandanas to soak up the sweat as they worked in a bunker that was uncomfortably hot and humid. It was dark and they didn't have tooling, and some of the sources were cemented in concrete in preparation for long-term storage. During that week, the U.S. embassy contacted them because of political unrest and they had to depart promptly. Despite the difficult circumstances, "we were able to complete the mission, thankfully," Manzanares says.

Manzanares also trains countries to assess their own problems with obsolete and abandoned radioactive sealed sources and to manage their inventory with proper packaging and transportation.

Since 2004, the U.S. program called Search and Secure has deployed equipment to more than 70 countries, trained more than 1,000 people and secured thousands of sources that may pose a threat to public safety. The program is managed at the federal level and operated by four national labs; Manzanares is the designated team leader for Los Alamos. (The International Atomic Energy Agency works closely with this program.)

"Most of these regulatory authorities are in their infancy, to be honest," he says. "We'll donate a suite of radiation detection equipment to them. And we'll go there and give them a full 40-hour course on how to search for and secure radioactive sealed sources that are orphaned or could become orphaned."

Manzanares points to a photograph of him in Jordan in 2013, with 10 men in white hard hats who he was training. "We do a practical exercise, where we actually hide radioactive sealed sources and allow the training participants to go out and demonstrate that they have learned the concepts and they know how to operate the equipment properly and effectively," he says. "They also must demonstrate that they can handle these radioactive sealed sources safely so they don't hurt themselves."

At the end of the training week, participants receive a certificate of participation. Some are custom agents, some are police, some are firefighters. "We ask them to send us people from all disciplines, so that way in the event of an emergency they can all network together," Manzanares says.

To boost sustainability of these overseas efforts, Los Alamos and Spectral Labs developed a simulation-based learning program called the Realistic, Adaptive, Interactive Learning System (RAILS). The software is designed for training law enforcement officers, coast guard, border patrol, hazmat teams and other first responders in the use of radioactive/nuclear, chemical and explosives trace detectors.

"They did a really fantastic job of duplicating the environments we would expect to work in and making the instruments look (and behave) as realistic as possible," Manzanares says. "This program allows the countries that we've trained to sustain this knowledge as they bring in new people. As they successfully pass exams, they get certificates issued to them."

Some of the wealthier countries help pay for the training.

There are many reasons why these U.S.-manufactured sources are in foreign countries. In some cases, U.S. entities passed on medical equipment that was out of date but still useful for a third-world country.

"It's a real concern. If we don't provide this effort internationally, you run the risk of these sources getting into the wrong hands," Manzanares says.

The other risk is to innocent people who don't realize the dangers.

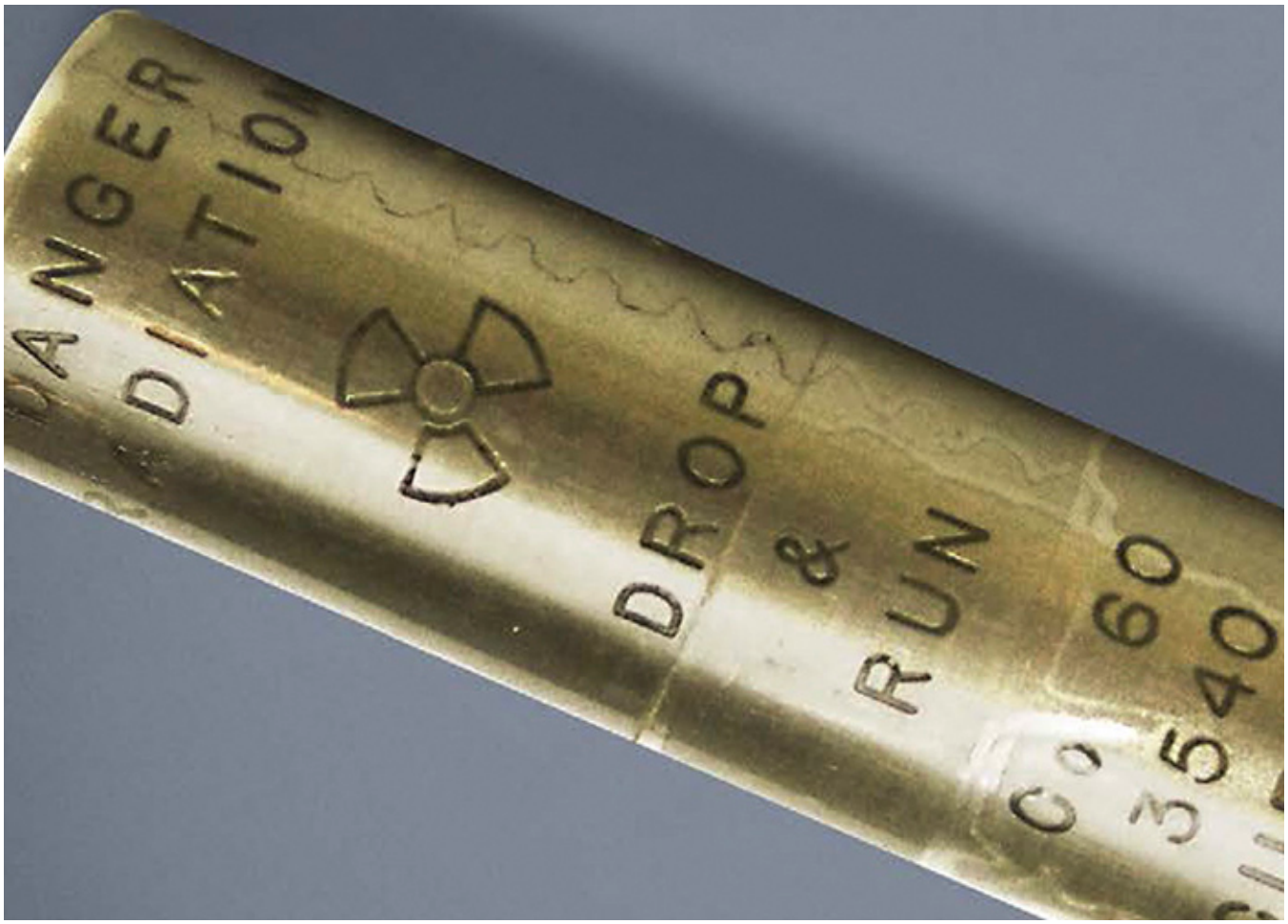
In Nepal, the International Atomic Energy Agency hosted a training for 15 countries, and Manzanares was there. "We got to listen to presentations from each of those countries on some of the disasters they have faced as a result of sources becoming abandoned," Manzanares says. "It happens mostly in scrapyards. People find metal, they take it apart and the next thing you know they've received a serious

radiation dose to their extremities, to their whole body. It's pretty sad to hear."

In some third-world country hospitals, there's a lack of understanding of how to manage devices properly and Manzanares tries to improve those situations through education. In the waiting room, patients will be sitting next to a cabinet filled with radioactive devices — and that shouldn't be happening.

Union Star, Missouri

In the United States, the OSRP teams plans what they call "milk runs," week-long trips where they hit different sites clustered in a region. Usually these are source manufacturers, hospitals, universities and industrial sites that have registered their unwanted radioactive sealed sources in the Los Alamos database.



But one outlandish call took Manzanares to a remote farm in Missouri. “When we got there, it was a big muddy field with lots of cows roaming around us,” Manzanares remembers.

Unsure of what to expect on this mission, Manzanares and the two team members with him had worn

hooded Tyvek suits and booties (as seen in top photo) — not the usual garb for a recovery operation. “Because these are sealed radioactive sources, we don’t usually have any concerns for contamination," he explains.

But this time the team was recovering radium needles, which a retired radiologist, now deceased, had been storing in his barn. Radium needles are used in brachytherapy, a procedure that uses radiation to destroy cancer cells and shrink tumors.

Manzanares wanted to protect himself and the team from potential radon gas releases from the radium needles, so they suited up. "It protected the team from the radon gas that is generated from the decay of Ra-226 and from the potential of alpha/beta contamination that could of been present if there was a compromised source," he explains. "Radon loves to attach itself to synthetic clothing and it becomes a challenge to distinguish it from real contamination. The only way to distinguish it is to allow the radon to decay away; it takes approximately 30 minutes for the activity to reduce by half."

Two operators examined and verified the radioactive sources. "It was an amount that was concerning," Manzanares says, summing up the magnitude of this recovery mission.

Smaller amounts of material typically have a commercial disposal pathway. OSRP handles the bigger stuff — it either gets sent to a federal disposal facility; sent to a consolidation facility; or shipped back to Los Alamos, where it is prepared for the Waste Isolation Pilot Plant (WIPP).

At the Missouri farm, the operators prepared the radium needles for shipping to a federal disposal facility. That involved encapsulating the sources, packaging them in specialized "Type A" containers and then scheduling a commercial hazmat carrier.

Fortunately, the team didn't have to work out in the barn, because the Missouri Environmental Protection Agency had secured the lead-shielded sources in a transportable container.

Cristy Abeyta, a former OSRP team leader who has been on recovery missions with Manzanares all over the world, recalls that it took time for the program to catch on and build its sterling reputation.

"In the beginning, people thought we were just trash collectors," Abeyta says. "Some people didn't understand what was involved. It's not just putting these sources in this bag, and then putting it in this drum and then shipping it here. It's a lot of research. It's a lot of intelligent people who have to know what sources are and what they do."

Leonard Manzanares is one of those intelligent people.

The drums in this shipment from Los Alamos to the Waste Isolation Pilot Plant hold radioactive sources recovered from civilian life: moisture density gauges used in construction and agriculture, coating thickness measuring gauges used in the paper industry, geology composition tools used in the oil and gas industry, pacemakers removed from the deceased, and more. The recovered sources contain plutonium, americium and cesium that terrorists could use for malicious purposes. Such items cannot be disposed of commercially, so research institutions and manufacturers turn to Los Alamos to recover their unwanted material from domestic and international locations.

Know someone who embodies a Lab character trait and deserves some recognition? Send nominations to dianadel@lanl.gov.

updated 11/29/18 3:38 PM
LANL site search
36°F

-
-
-
-
-
-
-